WHAT IS CLAIMED:

Sub A5

1. Apparatus comprising:

a plurality of storage locations for storing packets received from a network;

a system for dynamically calculating a probability distribution associated with network delays for plural packets; and

a CPU for calculating, based upon said dynamically calculated probability distribution, a delay associated with each storage location, and for causing a packet in each storage location to be transmitted out of the storage location after an amount of time equal to the delay associated with the storage location.

2. Apparatus of claim 1 wherein the CPU, in calculating said delay for a packet, calculates a difference between the optimal delay permissible to guarantee a predetermined probability of packet loss, and an actual delay experienced by the packet for which the calculation is being done.

3. Apparatus of claim 2 wherein the probability distribution is updated every Nth packet received, where N is a positive integer.

4. Apparatus of claim 3 wherein N is 1.

5. Apparatus comprising:

plural buffers;

an analog to digital (A/D) converter, the A/D converter being connected to each of the plurality of buffers;

a Central Processing Unit (CPU) for causing packets arriving from a network at said apparatus to each be stored in a separate one of the buffers, the CPU also being arranged to calculate, upon receipt of every Nth packet of data, an optimal delay beyond which a packet will be lost; and

a timer for causing each packet to incur an added delay at the gateway of the difference between the calculated optimal delay and the actual network delay experienced by said each packet.

6. Apparatus of claim 5 wherein N is greater than 1.

7. Apparatus of claim 5 wherein N is 1.

8. Apparatus of claim 5 further comprising a network interface card for receiving signals from the data network.

9. Apparatus of claim 5 wherein the CPU is a Digital Signal Processing (DSP) chip that performs DSP and control functions.

10. Apparatus of claim 8 wherein said network interface card implements the G.723 or G.729 standard.

11. A method of processing packets comprising::

a. receiving a packet;

b. reading information in the packet and ascertaining therefrom a delay incurred by the packet in traversing the network;

c. comparing the delay ascertained to an optimal delay; and

d. delaying use of the packet to reconstruct an analog signal by a calculated amount sufficient to make the calculated amount plus the ascertained delay substantially equal to the optimal delay.

12. The method of claim 11 further comprising setting said optimal delay at an amount equal to a minimum delay required to cause a specified probability of packet loss.

13. The method of claim 11 wherein said required minimum delay is recalculated every Nth packet, where N is a positive integer.

14. The method of claim 13 further comprising comparing said required minimum delay to a predetermined value each time said required minimum delay is recalculated, and, if said recalculated required minimum delay exceeds said predetermined value, assigning said required minimum delay to be said predetermined value instead a said recalculated required minimum delay.

15. A gateway comprising:

a CPU for calculating a delay to which each of a plurality of received packets should be subjected;

a buffer for storing said received packets;

a timer for subjecting each packet to a calculated delay that equals an optimal delay minus a network delay experienced by the packet, unless such calculated delay exceeds a predetermined maximum, in which case the predetermined maximum is utilized as the calculated delay.

16. A method of measuring varying delays among a plurality of packets, the method comprising:

receiving a first packet at a gateway;

assuming a reasonable value of a delay said packet experienced in traversing a network;

setting a clock at said receiving gateway to a value equal to a time stamp contained within said first packet plus said reasonable value.

17. The method of claim 16 further comprising receiving packets in addition to said first packet, reading a time stamp from said additional packets, calculating network delay for each of said additional packets based upon said clock at said receiving gateway and said timestamp from each of said additional packets.

18. The method of claim 16 further comprising updating a probability distribution function indicative of network delays after receipt of every Nth packet, where N is a positive integer.

19. The method of claim 18 wherein said updating is done using a recursive algorithm.

20. The method of claim 18 wherein said updating further comprises recalculating a buffer latency.

21. The method of claim 20 wherein said buffer latency is assigned a value different from the recalculated buffer latency if and only if said recalculated buffer latency exceeds a predetermined value.

22. Apparatus comprising:

a signal processor for calculating a delay experienced by each of a plurality of packets through a data network; and

a buffer system for delaying further conveyance of each of said packets by an amount of time dependant upon (1) a probability distribution updated in response to receipt and processing of selected ones of each of said packets, and (2) said calculated delay.

23. Apparatus of claim 22 wherein said buffer system is arranged to delay further conveyance by an amount also dependant upon a prestored maximum.

24. Apparatus of claim 23 wherein said signal processor is programmed to use a recursive algorithm.

25. Apparatus of claim 23 further comprising an interrupt generator for generating an interrupt when said amount of time for said each packet expires.

26. Apparatus of claim 23 further comprising a poller for sequentially polling each of a plurality of storage locations within said buffer system to determine if a packet within said storage location is to be further conveyed.

27. Timing apparatus comprising:

a processor for reading a time stamp in a received data packet, and for setting a clock a specified amount ahead of said time stamp; and

a receiver for receiving subsequent data packets and measuring delay by comparing a time stamp in each of said subsequent packets to said clock.

28. Timing apparatus of claim 25 wherein said specified amount is programmed to be a delay indicative of a delay experienced by a packet through a data network.

29. Timing apparatus of claim 27 further comprising a signal processor for converting data within said received packet and within said subsequent packets to an audio signal.